February 12 2018

USDA Forest Service
Attn: Objection Reviewing Officer
EMC, Mailstop 1104
1400 Independence Ave., SW Washington, D.C. 20250
objections-chief@fs.fed.us

Subject: **Notice of Objection: Use of Sheep, Goats and Pack Goats**
EIS / Shoshone National Forest

Dear Reviewing Officer:

I wish to file an Objection to the Shoshone National Forest Draft Record of Decision (ROD), the Final Environmental Impact Statement (FEIS) Use of Domestic Sheep, Goats, and Pack Goats, Shoshone National Forest, Wyoming, as well as the supporting document on which this FEIS is based, the Risk Analysis of Disease Transmission between Domestic Sheep and Goats and Rocky Mountain Bighorn Sheep (RADT, 2017). The legal notice was published in the Denver Post and Federal Register in December 2017. The Reviewing Officer is Glenn Casamassa, Associate Deputy Chief. The Responsible Official is Brian Ferebee. I previously commented on the Supplemental Draft EIS and RADT in 2017. A copy of my original comment letter should be available in the Public Record or Project file; I can also furnish you another copy upon request. The statements I provide in my Objection are linked to my previously-submitted comments; therefore I qualify to file an objection to the Final EIS, pursuant to 36 CFR 219.53. In addition, I have concerns that have arose after the opportunity for formal comment ended.

My objections, specific to the responses to my previously-submitted comments, are as follows:

Comment 229, Shoshone National Forest (SNF) response

An updated analysis of risk of contact between pack goats and bighorn sheep was provided in the final RADT and SEIS, along with an updated analysis of disease transmission risk. A qualitative method was used, and the rationale was provided. The final RADT discloses the evidence regarding the potential for disease transmission between domestic sheep, domestic goats, and pack goats, and bighorn sheep. The final RADT was revised and acknowledges that the science linking disease transmission from domestic goats to bighorn sheep is not as extensive as the evidence for domestic sheep. It also discusses emerging evidence that pack goats may be less of a disease transmission risk than other types of goats.

There are three comments in your response that are not adequate.

One, the rationale in the RADT for the qualitative analysis is not an acceptable response to my comment. USDA Forest Service WO direction states that "Forests that have necessary data, issue complexity, and the ability to conduct a quantitative bighorn sheep viability analysis may do so." WO guidance continues, "…a qualitative approach to NEPA analysis for bighorn sheep viability is sufficient as long as clear and reasonable rationale for the decision is displayed."

The SNF has the necessary data for a quantitative assessment. The SNF has the probability that pack goats carry MOVI (Dr. Highland, USDA -ARS). The SNF has data on the infection level currently in the Whiskey Mtn. herd. The SNF has pack goat use data for the affected area (they even have the ability to assign future use levels to a specific number). They have the ability to assess temporal possibility of contact (permit system). Finally, the SNF has complexity. The only thing that seems to be missing is "…the ability to conduct a quantitative bighorn sheep viability analysis…" The SNF RADTs qualitative assessment relies on unsupported opinions, misrepresents literature cited, side steps current research, fails to acknowledge disease risks from other animals. The result is a faulty and biased RADT unsupported by any underpinning of objective scientific rigor.

Does the SNF not have the ability to conduct a quantitative assessment? So far you have not shown you do. Please provide evidence you do or what assistance you will seek.

There are numerous sources to access the necessary skills for conducting a quantitative assessment. The following is a sample but far from an exhaustive list: Rocky Mountain research station; Intermountain Research Station; Pacific Southwest research station; numerous Universities; numerous private contractors with expertise in risk analysis. I have worked with a number of these sources on projects far more rigorous than yours. Within the agency, costs are often minimal or at no cost. Outside the USDA costs can be quite reasonable. Especially in consideration of the time and court costs of your current approach. In the end, the RADT would be a professional and defensible assessment. Not one based on a select literature review, unsupported opinions and erroneous statements biased toward a predetermined outcome.

Two, in the last sentence the comment
"…emerging evidence that pack goats may be less of a disease transmission risk than other types of goats."

This is a biased and incorrect statement. The evidence is not emerging nor is there doubt. The statistical likelihood for pack goats to carry Mycoplasma ovipneumonaie (MOVI) was available prior to your second attempt at an RADT, but was intentionally disregarded by the SNF. This is in violation of NEPA requiring the use of current research. An overwhelming number of comments to the RADT forced a more substantive acknowledgement of this information.

However, the RADT continues to discount this scientific information (Dr. Highland, USDA- ARS) . Using the word emerging implies a lesser standing than other literature and opinions cited that supports the SNF position on goats. The RADT must be changed to acknowledge**, current USDA-ARS evidence indicates that pack goats are a negligible disease transmission risk to bighorn sheep.**

My Comment 243

Please consult outside sources knowledgeable and with experience in the discipline of risk analysis to help you design a proper risk analysis. Risk analysis is a discipline in its own right. This RADT appears to suffer from a limited knowledge base and an over reliance on one particular field of study.

SNF Response to comment 243

General comment, opinion, or position statement. The RADT was prepared by journey level wildlife biologists meeting OPM standards for this position, and was reviewed by regional level staff from multiple disciplines.

This response is inadequate and does not address the comment.

There is **NO** OPM standard for journey level wildlife biologists. There are only two designated OPM series, general wildlife biologists (0486 series) and research biologists. Specifically, the 0486 series has no requirement, explicit or implied, with respect to any training or experience in designing and conducting a risk assessment. A BS or MS in wildlife biology, X number of years' experience in general wildlife biology a particular GS rating does **NOT** define journey level by OPM standards or by any other standard with respect to designing and conducting a risk assessment. Journey level in any discipline requires specific training, experience and mastery in a particular endeavor. In this case risk assessment.

A few of the concerns with respect to the journeyman level qualifications of the RADT preparers are: the withdrawal of the original SNF RADT for failure to comply with a court order; use of an obvious inappropriate Risk of Contact model; numerous incorrect and misrepresented statements with respect to literature cited; usage of language (e.g considerable, numerous, significant) with no supporting evidence; failure to address risks from animals other than sheep, goats and pack goats, reliance on dated and handpicked research . In short, the RADT fails to demonstrate a high level of journey level wildlife biologists attributes. Most certainly, not journey level biologists with respect to developing, conducting and reviewing a risk assessment. Your response to comment 243 is in error and not supported by performance in the RADT. Please provide a more accurate and specific response to my concern.

Please provide:

1) The specific training and experience Andrew Pils and James Wilder have in designing and conducting a risk assessment? So far, there appears scant evidence they have any.

2) Your simple statement that a qualitative assessment was used is inadequate for you have not given a clear, compelling and rational explanation as required. Please provide a list of outside sources used in designing the RADT risk assessment and their qualifications in risk assessment. If none were used what was the rationale?

3) A list of the reviewers, their risk assessment qualifications and the review comments.

Page 23, "Moderate" risk, RADT statement:

"It could also occur when there is direct overlap between a pack goat use area and mapped bighorn sheep range."

This language assigns a moderate rating solely on overlap of area. There is **NO** consideration of the current research and information of the negligible risk pack goats pose for transmitting MOVI. There is **NO** consideration for temporal overlap. There is **NO** consideration of the likely hood of close contact, which would be required to transmit bacteria. It falsely lumps pack goats with the same risk category of bacteria transmission as domestic sheep. There is ample evidence this is **NOT** the case. Time and time again the RADT does not adequately assess pack goats separate from domestic sheep and herd goats. You are not in compliance with WO direction as again you fail to provide a clear and rational bases for your risk rating and fail to assess pack goats seperately.

Page 23, "Low" risk, RADT statement:

"…"Low" risk indicates that physical contact between domestic sheep and goats and bighorn sheep is believed to be unlikely or irregular and unpredictable."

There is no evidence of any pack goat ever being in contact with a bighorn sheep. Also, in the past 20 years there is no anecdotal evidence from pack goat users that any of their animals have ever had contact with bighorn sheep. How does this not qualify for "unlikely or irregular and unpredictable"? Considering the unlikely event of contact, along with the negligible risk of MOVI bacteria transmission (especially to a bighorn sheep population currently infected with

MOVI) the far more serious risk of disease transmission is toward pack goats, rather than from pack goats.

Page 23, “Low” risk, RADT statement:

…”It could also occur when there is direct overlap between mapped bighorn sheep range and pack goat use areas but mitigation measures are in place to limit potential for contact.”

Specific mitigation measures have been proposed and can be easily in place to limit potential for contact.

Page 31, last paragraph, RADT statement:

“However, these mitigation measures have not been implemented on the SNF or elsewhere, and there is uncertainty about their ultimate efficacy.

The SNF, along with every other National Forest has ample experience with USDA FS permit systems and mitigation measures, e.g. livestock grazing, timber harvesting, mineral exploration, recreation activities, special use permits, pack stock use, travel restrictions, fire restrictions, fire wood permits, etc. Examples of USDA FS mitigation measures and permit systems are wide reaching and exhaustive, covering virtually every activity taking place on national forests. You have already implemented a mitigation measure with the temporary closure of large sections of the SNF to pack goat use. By such action, the SNF has explicitly taken the position they have the ability to affect “*ultimate efficacy*” with respect to pack goats. To suggest that a new set of mitigation measures is beyond the SNF to reasonably monitor is ludicrous. The RADT provides no clear and rational evidence to support the highly opinionated and unsubstantiated statement. The RADT statement must be removed as it is an unsupported opinion.

Page 31, last paragraph, RADT statement:

As a result, there would still be substantial uncertainty associated with the potential for disease transmission to occur resulting in a bighorn sheep pneumonia die-off.”

The RADT presents no scientific evidence to support this blatantly untrue statement that pack goats provide substantial uncertainty for causing a bighorn sheep die-off. There is NO research literature implicating goats, especially pack goats, to a bighorn sheep die-off. There has been an anecdotal attempt to correlate bighorn sheep disease transmission with proximity to weed-eating goats (Coggins, et.el. 2002). However, should one read the total text of this paper, there is no evidence to substantiate the RADT opinion. Even at that, the paper did not attempt to link weed-eating goats to a bighorn die-off. Most certainly there is absolutely no evidence supporting an opinion that pack goats are a substantial uncertainty for causing a bighorn sheep

die-off. It has never occurred and current evidence indicates it is highly unlikely. The RADT statement is not supported by research; has no validity and must be removed.

Page 30, third paragraph, RADT statement

"…bighorn sheep and domestic sheep and goats are socially attracted to each other, which increases the probability that they will make the close contact necessary for disease transmission."

There is NO evidence that pack goats are socially attracted to bighorn sheep or that this attraction is stronger than their attraction to humans. Your cited literature pertains to domestic sheep and herd goats and is not applicable to pack goats. All evidence by those who have pack goats and have first-hand knowledge of their behavior around other animals have first- hand experience to attest that pack goats are NOT socially inclined to mill around with other animals. Pack goat users are far more of a subject matter expert on this topic than the RADT preparers, who by their comments, lack experience and knowledge of pack goat behavior. To a large extent pack goats are disinclined to even mingle with other pack goats outside their own herd. Pack goats are socially attracted to people, not to bighorn sheep. In addition, bighorn sheep are NOT socially attracted to humans making it highly improbable for close contact. The RADT statements are inconsistent with known behavior traits of pack goats rendering them highly subjective and inappropriate. You provide no evidence to support your statements. Your literature cited does not address pack goats and their unique behavior patterns versus the behavior patterns of domestic sheep or goat herds.

With respect to pack goats the RADT statement is not based on factual evidence and is an unsupported opinion or comment only and must be removed.

Page 31 first paragraph

The opinions of P. Klein discounting the testing of back goats are inconsistent with the discipline of statistics. Dr. Highland (USDA-ARS) tested 576 goats, three times. A Sample size of 576 delivers a significantly high statistical confidence level around the findings. The tests were conducted at random time frames, incorporating numerous pack goat sites, each goat was tested three different times over the course of several months and in different physical settings. In other words, multiple tests replicated over time involving various sites. The samples were verified by WADDL and USDA-ARS-ADRU research labs. Statistically speaking, if the concern, such as pack goats could mingle with others and contact disease at a future date or goats may not be currently shedding but may in the future if they come under stress shows a gross lack of knowledge in the discipline of statistical science. For these concerns to have

validity, significant evidence of variability in MOVI occurrence would have been revealed in the research testing. However, this was not the case.

The effort by P. Klein to ignore USDA-ARS's research data is also a violation of the congressional appropriation requiring the Forest Service to collaborate with ARS on any decisions regarding bighorn sheep. There is a strong case to be made this is a violation of the law. The review statement by P. Klein, USDA Forest Service, must be considered an unsupported opinion without statistical merit and must be omitted.

Pack goats are acquired primarily from two sources. One, purchased from dairy herds that employ strict control over the health of their animals, and two, purchased from breeders who specifically raise goats for packing. Maintaining disease free herds, not just MOVI, is paramount for their financial interest and business integrity. Therefore, it is not surprising that Dr. Highlands research disclosed an extremely low MOVI prevalence. Subsequent testing was consistent with the initial findings and did not over time reveal any statistical change in MOVI shedding occurrence.

There is no rational evidence to support the claims in the RADT that the testing of pack goats should be discounted. These unsupported and statistically invalid statements must be omitted. Once again, please get outside assistance with knowledge in conducting an objective risk assessment. Sources with a greater understanding of statistics would be helpful.

Ms. Klein's comments were forwarded to Dr. Highland, and she submitted a response. Dr. Highland's response is supported by Dr. Don Knowles, Research Leader of the Animal Disease Research Unit of the Agricultural Research Service, USDA and Professor, Department of Veterinary Microbiology and Pathology, Washington State University. I have attached Dr. Highland's response at the end of my Objection, cited as Reference 1.

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Page 21, last sentence second, RADT statement:

"Additionally, due to the lack of available data and substantial uncertainty regarding the numerous factors associated with the probability of actual contact occurring between pack goats and bighorn sheep, and the potential risk of disease transmission between the two if contact were to occur, a quantitative method could not be used."

Were the preparers of the RADT more knowledgeable in quantitative risk assessments skills they would know this is an untrue statement.

One, you do have reasonable data on the probable level of disease in the bighorn sheep population.

Two, you have statistical data on the probability of MOVI prevalence in pack goats.

Three, substantial uncertainty regarding the probability of contact is highly over stated . The statements in the RADT are highly subjective and unsupported opinions. There are NOT numerous factors involving the probability of contact. In reality, the most likely and pretty much the only one is a lost pack goat. This can be easily modeled. Using data sources you already have, consider the number of pack goat trips and number of goats an area experiences. Using this as a base number, estimate a high and low range for the number of goats an area may experience. From this, a range of the number of lost pack goats can be considered. This provides a range of outputs that will provide a method of conducting a sensitivity analysis for variables that are not hard numbers. A sensitivity analysis is a straightforward and effective methodology for addressing ambiguity or a range of possible data sets. I outlined a possible scenario in my original comments that was more valid and defensible than your subjective approach. You have still not given an objective, clear and rational explanation why you continue to dodge the more salient characteristics of a risk assessment? You have failed to follow the USDA-WO direction. The SNF RADT is not a science based objective risk assessment.

Please respond to requests by taking the actions I have recommended in this Objection. In addition, I request a meeting to discuss and potentially resolve the objections in accordance with 36 CFR § 219.57.

Sincerely,

Carl Dammann

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Reference 1

Dr. Margret Highlands comments on Ms. Kleins review of the USDA-ARS-ADRU findings.

As far as the test results from the pack goat study, NAPgA has the results (laboratory reports) from the duplicate samples that were tested on the first round of nasal swabbing which were submitted to an accredited laboratory for testing (the WADDL). If she didn't want to trust the USDA-ARS-ADRU findings, certainly the WADDL findings should be considered trustworthy based on Ms. Klein's criteria. Multiple laboratories did not test samples….all samples were tested in my USDA-ARS-ADRU laboratory with

duplicate swabs from the first sample collections tested at the WADDL for confirmation of my laboratory's testing. It's unclear what Ms. Klein means by "standardized testing", the WADDL is an accredited state diagnostic laboratory that uses a validated test, and my lab is a federal research laboratory within which all samples were treated, and all samples were tested the exact same using now 3 different assays (PCR and sequencing) to confirm positive and negative samples with the best accuracy possible. Ms. Klein seems to lack knowledge and/or understanding of the data that USDA-ARS-ADRU clearly outlined and shared with the FS, lending to question whether she even read the information/data provided by USDA-ARS-ADRU (Dr. Highland), as the information provided clearly stated the study design for testing. Additionally, we sampled on a volunteer basis, the number per state is irrelevant as we are not performing inter-state comparisons. In summary, if Ms. Klein didn't understand the study and results from the USDA-ARS testing, why would she not have contacted Dr. Highland at the USDA-ARS-ADRU. It would have seemed the prudent thing to do considering the fact that there is an active Congressional Appropriation that mandates the Forest Service work with ARS in matters of bighorn sheep and land management.

Ms. Klein goes on, after disregarding USDA-ARS-ADRU data from the 2016 pack goat study due to it not being in a peer-reviewed published format, to reference the NAHMS 2011 sheep study. However the *M. ovipneumonaie* study performed on NAHMS 2011 samples has NOT been peer reviewed, no more than the pack goat study, as the NAHMS study was published only in an intra-agency brief by APHIS, not in peer reviewed publication/journal, and that intra-agency brief simply summarizes the prevalence data as I did in my email to the Forest Service. Why would the number of premises per state matter in the pack goat study? The study was not designed to compare states, but rather simply test as many volunteer premises and as many goats as possible from owners who volunteered for the study. Considering the number of pack goats in the Western United States, it would seem that >550 animals tested 3 serial times is significant number of animals, with or without whatever statistical analyses that Ms. Klein believes needs to be performed to validate the data that USDA-ARS-ADRU provided; data that was disregarded by Ms. Klein. Ms. Klein is also confused about the NAHMS **SHEEP** study and randomly throws “goats” in to the picture. On the 453 premises/operations tested in the NAHMS 2011 surveillance sampling, only sheep were tested; in other words Ms. Klein inaccurately states "sheep and goat operations"; perhaps some of the tested premises also had goats, but the NAHMS 2011 sample collection was on sheep operations. Based on this, all information put forth by Ms. Klein in her response is questionable, as she clearly does not understand the available data/"science" regarding *M. ovipneumonaie*. The testing performed on the NAHMS samples was done on just 15 animals (I'm pretty sure it was 15 not 10, as Ms. Klein states) from each of the tested flocks and was performed at the WADDL prior to January 2016. That testing was funded by USDA-ARS-ADRU, under Dr. Don Knowles as the research leader. Dr. Knowles recently requested that his name and USDA-ARS-ADRU be withdrawn from any acknowledgment or authorship on a manuscript that is being considered for peer-reviewed publication, and asked for the USDA-ARS-ADRU funded data be deemed unusable based on the fact that the WADDL PCR that was being used prior to January 2016 (PCR assay published in PlosOne, 2014, authors Ziegler, et al. (last author Besser)) is not specific for *M. ovipneumonaie*, but rather also detects at least one other (at the time unrecognized, and to date uncharacterized) bacterium. Highland/USDA-ARS-ADRU currently refers to this bacterium as "Mc-l" and Highland's laboratory has found it in 15%+ of the goats tested and in up to 10% of sheep tested in certain regions of the U.S. As per communications with Dr. Highland, WADDL's new PCR no longer has this false positive problem, since redesigning in January 2016, based on comparisons of hundreds of duplicate swabs tested in the WADDL and in her USDA-ARS-ADRU laboratory. In summary, if "there should be reservation on drawing any conclusions or interpretation of the data" from the pack goat data USDA-ARS-ADRU supplied to the Forest Service, the same should hold true for the *M. ovipneumonaie* results from the NAHMS 2011 samples. If there are

questions regarding this information, please contact either Dr. Don Knowles (dknowles@wsu.edu), who, as stated, was the acting research leader at the time of testing the 2011 NAHMS samples, or Dr. Maggie Highland (maggie.highland@ars.usda.gov).

Following comments on the NAHMS data, it looks like Ms. Klein has copy and pasted paragraphs from the NAHMS non-peer reviewed information sheet, randomly throwing the word 'goat' in here and there. It's unclear why she comments on vaccinating domestic sheep (and goats). It seems Ms. Klein just randomly threw in some data that she found as a place filler, as none of it has anything to do with whether or not ADRU/Highland's research was adequately considered.
The review then moves into "other goat diseases that may be easily transmitted via direct contact or environmental contamination, and pose a potential significant health concern to BHS". This lumps pack goats into the same group with large production operations, as if the animals are treated and managed the same. The 2009 study likely covered no pack goat premises. CLA is tested for, so if animals are confirmed negative by available testing, this can be thrown out. Sore mouth (contagious ecthyma) requires active outbreaks (like herpes simplex 1) to be contagious and unstressed adults typically do not have outbreaks. No packer would take a sick animal (one with obvious lesions of sore mouth) out in the woods, at least not a responsible one.

I find this an interesting point:
"1. Development of standardized testing protocols for health certification of domestic sheep and goats to determine disease prevalence within domestic herds. However, organisms like M.ovi and Pasteurella (Mannheimia, etc) are intermittently shed by reservoir hosts. Stress may elicit active shedding by individuals that may not be documented from on-farm herd testing."
Something to consider: reservoir hosts can and do include wild sheep and goats, and as recently discovered, other animals (see next bolded paragraph).

New data and discovery supports the fact that NOT ONLY members of the subfamily Caprinae (goats, sheep, muskoxen) can carry *M. ovipneumonaie.* To date USDA-ARS-ADRU and testing performed at an accredited laboratory have both identified *M. ovipneumonaie* in white-tail deer and bison in the lower 48 states of the United States. Information/data to support this statement can be provided to the Forest Service by USDA-ARS-ADRU/Highland. The testing performed to confirm these findings includes isolation of *M. ovipneumonaie* and PCR and sequencing of the bacterial genome from samples collected from both healthy animals (bison and deer) and animals exhibiting respiratory illness (deer). This discovery was first made in November 2017 when 2 of 4 tested white tail deer in a captive zoological setting were confirmed positive; in December 2017 the USDA-ARS-ADRU had a PCR-sequence positive *M. ovipneumonaie* detection in the only nasal swab that they had ever tested from a bison. Subsequent investigations and communications with a DVM in the upper Midwest of the U.S. in December 2018 led ARDU/Highland to the referred accredited laboratory and the discovery that *M. ovipneumonaie* has been confirmed by that laboratory in white tail deer and bison (personnel communications with the DVM case coordinator at said laboratory). Should Forest Service personnel want further detailed information to corroborate these findings they should (and are obligated by Congressional appropriation to) contact USDA-ARS (maggie.highland@ars.usda.gov).

(The previous information was delivered at the ASI Convention in San Antonio, TX on February 2, 2018)